UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

NMFS Tracking No.:
2002/00355

August 15, 2003

Thomas F. Mueller
Chief, Regulatory Branch
U.S. Army Corps of Engineers
Post Office 3755
Seattle, Washington 98124-3755

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Miller Creek Wastewater Treatment Plant Outfall Replacement, WRIA 9

Dear Mr. Mueller:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Miller Creek Wastewater Treatment Plant Outfall Replacement in WRIA 9 and in King County, Washington (COE Reference No. 200200078). In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Puget Sound chinook. As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries finds necessary to minimize the impact of incidental take associated with this action.

This document contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for three species of Pacific salmon, 18 species of groundfish and four coastal pelagic species. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this letter, please contact Phyllis Meyers of my staff in the Washington Branch of the Habitat Conservation Division at 206-526-4506.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: Marcelle Lynde, Devine Tarbell & Associates, Inc.

Endangered Species Act - Section 7 Consultation
Biological Opinion
and
Magnuson-Stevens
Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Miller Creek Wastewater Treatment Plant Outfall Replacement, Normandy Park, Washington
NMFS Tracking No.: 2003/00355

Agency: Army Corps of Engineers, Seattle District

Consultation Conducted By: National Marine Fisheries Service
Northwest Region

Issued by: Russell M Strach for Date: August 15, 2003

D. Robert Lohn
Regional Administrator

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1.0 INTRODUCTION

This document is NOAA's National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (Opinion) under section 7 of the Endangered Species (ESA), and Essential Fish Habitat (EFH) consultation under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The Army Corps of Engineers (COE) proposes to issue a permit to Southwest Suburban Sewer District (SSSD) to replace the Miller Creek Wastewater Treatment Plant Outfall at Normandy Park, King County, Washington. The existing outfall pipe is within the shore zone of Puget Sound and within the range of the Puget Sound chinook salmon evolutionarily significant unit (ESU). The shore zone of Normandy Park is in Washington Resources Inventory Area (WRIA) 9. The proposed project area is also essential fish habitat for chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), Puget Sound pink salmon (*O. gorbuscha*), 18 groundfish species, and 4 coastal pelagic species.

1.1 Background Information

The COE concluded that the project proposed by the SSSD is likely to adversely affect Puget Sound chinook, but will not adversely affect EFH. NOAA Fisheries agrees with these determinations.

1.2 Consultation History

This document is based on information provided in the Biological Evaluation (BE) and the EFH assessment and supporting documentation received by NOAA Fisheries on April 3, 2003. The BE is dated March 2003. In addition to the above-referenced BE, the COE provided a consultation request letter received April 3, 2003, a Memorandum for the Services dated March 31, 2003, and a Comment Response document with attachments.

1.3 Description of Proposed Action

The COE proposes to issue a permit to the SSSD. The permit would cover activities to replace the end of an outfall pipe that is deteriorating and leaking. The end of the existing outfall is a 680-foot length of corrugated metal pipe that is 30 inches in diameter. It will be replaced with a 685-foot length of 36-inch diameter high-density polyethylene (HDPE) pipe. The pipe section slated for replacement is located at approximately 13.5 to 213 feet below Mean Lower Low Water (MLLW).

1.3.1 Divers Survey and Mark Outfall Pipe Location

Prior to trench excavation, divers will locate the existing outfall pipe on the substrate surface and mark the location estimated to contain the concrete pipe and corrugated metal pipe connection. Eelgrass near the project area will be marked with stakes and or buoys to enable the avoidance or minimization of effects on eelgrass.

1.3.2 Excavate Trench and Remove Buried Portion of Existing Pipe

A trench, 270 feet long and 30 feet wide at the shallow end and 8 feet wide at the deeper end, will be excavated. Approximately 220 feet of the existing corrugated metal pipe will be removed. The trench will be excavated using a barge mounted clamshell bucket operated at a slow speed to minimize turbidity. All excavated material will be loaded onto a barge that will completely contain the dredged material. The dredged material will be disposed of at an approved upland disposal site. Approximately 800 cubic yards of material will be removed. The buried portion of the existing outfall pipe will be removed from the site. Approximately 350 linear feet of the existing outfall pipe is to be abandoned in place on the substrate surface.

1.3.3 Install Replacement Pipe and Fill Trench

The new pipe will be placed in the trench in shallow water. At about minus 50 feet MLLW, it will transition from being buried to resting on the substrate surface. The new pipe will be pre-assembled off-site and delivered to the site by several barges that will also serve as construction platforms. The assembled pipe will be neutrally buoyant until it is filled with water and submerged. After the pipe is submerged, it will be connected to the existing concrete portion of the outfall. Pre-cast concrete anchors will be attached around the new pipe along its length. The new pipe will be installed parallel to the existing pipe at depths below the buried section. The trench will be backfilled with clean sand to minimize dispersion of fine sediment particles. All fill will be deposited in place and not dropped from the barge.

1.3.4 Timing, Duration and Avoiding Impacts

Construction is expected to take between three and four weeks, and is planned to occur between July 16 and January 14. Pipe replacement should take two to seven days. During this time, treated effluent will be discharged at a relatively shallow depth. To reduce impacts to marine resources from chlorine and chlorine compounds, the treated effluent will be dechlorinated during this period of shallow discharge. Divers will survey for environmental damage and impacts to eelgrass after placement of fill. Lost or disturbed eelgrass habitats will be revegetated or enhanced.

1.4 Description of the Action Area

The action area is between Three Tree Point and the Des Moines Marina in Puget Sound. The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this project, the action area is the area directly affected by trenching as well as the substrate and water column in Puget Sound within 150 feet of the trench and other work areas. The action area was primarily determined by the distance in which increased turbidity from construction activities could affect fish. It is anticipated that turbidity will not exceed five nephelometric turbidity units (NTU) above background outside of this area. Since no equipment operation, materials staging or other

work is proposed landward of the submerged outfall connection point, the adjacent uplands and intertidal zone are not part of the action area.

2.0 ENDANGERED SPECIES ACT

2.1 Biological Opinion

The purpose of consultation under the Endangered Species Act is to ensure that any action authorized, funded or carried out by a Federal agency is not likely to jeopardize the continued existence of threatened or endangered species, or result in the adverse modification of designated critical habitat. Formal consultation concludes with the issuance of an Opinion.

2.1.1 Evaluating The Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined in 50 CFR. Part 402. NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of (1) defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of injury and mortality attributed to: (1) collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. NOAA Fisheries must identify whether there are any reasonable and prudent alternatives for the action if it is determined that the action will jeopardize a listed species.

2.1.1.1 Biological Requirements

The biological requirements are those conditions necessary for Puget Sound chinook to survive and recover to naturally reproducing population levels at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

Biological requirements are defined as properly functioning conditions of habitat characteristics that are relevant to any chinook life stage. Information related to biological requirements for Puget Sound chinook may be found in Myers et al. (1998). Listed salmonids use the action area as a migratory corridor and possibly for juvenile rearing. The specific biological requirements of Puget Sound chinook that are likely to be affected by the proposed action include water quality and habitat access.

2.1.1.2 Environmental Baseline

The environmental baseline represents the current set of conditions, to which the effects of the proposed action are added. Environmental baseline is defined as "the past and present impacts of all Federal, state, and private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or informal consultation, and the impact of state or private actions which are contemporaneous with the consultation process" (50 CFR 402.02).

The outfall pipe extends 1800 feet into Puget Sound to a depth of approximately 213 feet below mean lower low water (MLLW). The shore in the vicinity of the project is sandy beach, with the intertidal area composed of gravel and cobble that transitions into sands and gravels with increased depth and distance from shore. Miller Creek discharges into Puget Sound a short distance north of the outfall.

Young chinook use estuarine habitats for rearing and migrating. Organisms that reside in intertidal regions are a part of their diet. As the chinook become larger and begin to inhabit deeper water, their dietary preference appears to shift to larval and juvenile fishes (Groot and Margolis 1991). Pacific herring and Pacific sandlance are important prey for chinook (Hunt et al. 1999). Pacific herring and Pacific sandlance depend on intertidal and shallow subtidal habitats for reproduction (Hart 1973) so even though chinook may be feeding on them in deeper water, their source depends on shallow habitats as well. Collections in beach seines suggest that juvenile chinook are oriented to shallow water habitats close to shore, and are most abundant in intertidal flats and shallow subtidal channels near estuarine and tidal marshes and eelgrass meadows. As opportunistic feeders, chinook juveniles prey on a diverse array of benthic, detritus-rich habitats. (Battelle Marine Sciences Laboratory et al. 2001).

Chinook habitat throughout the Puget Sound ESU has been significantly altered by human activities over the past few decades. Nearshore habitat alteration, degradation, and loss have resulted from a number of activities, including filling, dredging, shoreline armoring, overwater structures, waste and wastewater disposal, non-point pollution, vegetation removal, shoreline development, roads, and changes in hydrology (Battelle Marine Sciences Laboratory et al. 2001). Within Puget Sound, Central Puget Sound has the highest level of shoreline modification overall (52%) and the highest percentage of shore with intertidal modification (45%) (Broadhurst 1998). Many shore areas lack natural overhanging vegetation. Overhanging vegetation is thought to be a major source of nutrients fueling the nearshore food web (Simenstad and Wissmar 1985). Shore armoring has stopped sediment and wood inputs that provide structural and biological habitat functions beneficial to juvenile salmon. Clearing riparian vegetation, land filling, and armoring the shore zone has resulted in a narrower and steeper beach profile in many locations. This has reduced the amount of upper intertidal rearing habitat available for producing prey organisms preferred by juvenile salmon. It has also reduced the amount of shelter and refuge habitat for salmonids, thus reducing the probability of survival of those chinook salmon that depend on these areas. The loss of preferred shallow habitats may also force use of deeper

habitats by migrant juvenile chinook at times and places unfavorable for their survival, i.e., encountering less food and more predators.

Resident populations of Puget Sound chinook are almost entirely piscivorus. Pacific herring comprise 60 % by biomass of the diet. Gadids (cod fishes), Pacific sandlance, anchovies, and shiner perch make up the remainder (Fresh et al. 1981 as cited in Battelle Marine Sciences Laboratory et al. 2001).

2.1.1.3 Factors Affecting Species in the Action Area

303(d) List. The southern central portion of Puget Sound has documented water quality problems. The Washington Department of Ecology lists pH, fecal coliform and Ammonia at levels that exceed water quality standards on its Clean Water Act section 303(d) list.

Contaminants Not Regulated Under the Clean Water Act. There is potential for adverse impacts from treated effluent, even if the regulatory requirements of the Clean Water Act are met. The effects of estrogen and other endocrine-disrupting compounds thought to be effluent are not yet known in Puget Sound (Parametrix 2002). In addition, limited research has been done to determine the potential for synergistic effects of contaminants at concentrations below those known to be harmful for individual constituents.

King County has analyzed the potential effects of discharging treated effluent into nearby waters of central Puget Sound (King County 2001a). Several factors taken together dramatically reduce the potential for adverse impacts resulting from discharging treated effluent. Primary and secondary treatment, discharge location in relation to sensitive species habitats, impediments (such as stratification and currents) for transport of contaminants to the microlayer and nearshore and the limitation of light for primary productivity (at depth and seasonally) all lessen possible biological adverse affects from such discharges (Ebbesmeyer and Cannon 2001, King County 2001a).

Combined Sewer Overflows. In WRIA 9, the primary source of untreated sewage discharges to Puget Sound are from combined sewer overflows (CSOs). CSOs are discharges of untreated sewage and stormwater that flow directly into the nearshore, lakes, or streams during periods of heavy rainfall. They consist of both sewage and stormwater and are relief valves when heavy rainfalls overwhelm the capacity of the sewage system. Sewage is then discharged into the nearshore in order to protect the sewer infrastructure and prevent sewage from backing into homes, streets and wastewater plants. There are ten CSOs south of Alki Point. Five are operated by King County and five by the City of Seattle (Battelle Marine Sciences Laboratory et al. 2001). The SSSD has no known CSO discharges (Marcelle Lynde, Senior Fisheries Biologist, Devine Tarbell and Associates, Inc., June 27, 2003).

Microlayer. The microlayer in the action area is likely to contain unknown amounts of contaminated materials that are known to be toxic to aquatic organisms (Herrera and Parametrix 2002). It is possible that some of the effluent from the SSSD outfall raises to the microlayer

(Word et al. 1990). The microlayer is a naturally occurring feature on the surface of water bodies that is biologically rich. Puget Sound chinook are exposed to toxins that accumulate in the microlayer if they are forage in areas where microlayer contaminants are in prey organisms. Depending on tissue concentrations that accumulate in the chinook, these contaminants may reduce the probability of survival of juvenile chinook salmon.

Leaks in the Outfall Pipe. Leaks in the existing outfall pipe allow a greater volume of effluent to enter sensitive nearshore habitats than will the post-construction condition.

2.1.1.4 Status of Species

Puget Sound chinook salmon were listed as threatened under the Endangered Species Act (ESA) on March 24, 1999 (64 FR 14308). A Biological Review Team (BRT), appointed by National Marine Fisheries Service, had concluded that the Puget Sound chinook evolutionarily significant unit (ESU) was likely to become endangered in the foreseeable future. In a recent status review, estimates for Puget Sound chinook populations are very similar to the previous status review conducted with data through 1997 (National Marine Fisheries Service BRT 2003).

The Puget Sound ESU is made up of 22 populations. The ESU includes all naturally spawned populations of chinook salmon from rivers and streams flowing into Puget Sound including the Straits of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington.

Freshwater and nearshore chinook habitat throughout the ESU has been affected by hydrologic change, loss of riparian function and passage barriers. Dams and road culverts have blocked access to large amounts of habitat. The quality of accessible habitat has been degraded by land-use practices that result in higher water temperature, unstable water flow and silted-in stream beds. Fisheries harvest impacts on the ESU have gone from an average of 75% in the earliest five years of data availability to an average of 44% in the most recent five year period (National Marine Fisheries Service BRT 2003).

Chinook salmon have evolved two life history types (National Marine Fisheries Service BRT 2003). One strategy, described as “stream type,” is where the juveniles spend one year or longer in freshwater residence after emergence from the egg stage. The other strategy is called “ocean type” because the juveniles typically migrate to marine waters soon after emergence from the egg stage. The ocean type juveniles generally inhabit the nearshore areas of estuaries and move off and into deeper waters as they grow and age (Groot and Margolis 1991). Stream type juveniles, compared to ocean type juveniles, generally move out and into deeper water upon entry into estuarine waters. Typically one to six years later they return as mature adults to their natal rivers and spawning grounds.

2.1.1.5 Status of the Species within the Action Area

It is likely that juveniles from a variety of Puget Sound chinook populations are present in the action area at different times. The central portion of Puget Sound is in the migration pathway of all anadromous fishes that spawn in streams and rivers flowing into southern Puget Sound. Populations associated with northern Puget Sound tributaries use the area for rearing as well. Juvenile chinook in Puget Sound appear to be broadly distributed throughout Puget Sound during rearing and migration phases (Fresh 2003).

2.1.2 Effects of the Proposed Action

The ESA implementing regulations define "effects of the action" as "the direct and indirect effects of an action on the species together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline" (50 CFR 402.02).

2.1.2.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Direct effects result from the agency action and include the effects of interrelated actions and interdependent actions. Future Federal actions that are not a direct effect of the action under consideration (and not included in the environmental baseline or treated as indirect effects) are not evaluated (50 CFR 402.02).

The direct effects of this project will result from the extent and duration of construction activities in Puget Sound. Construction will occur in habitat used by chinook for migration, feeding and rearing. Construction activities will remove organisms chinook feed on and will degrade water quality. The project includes measures to minimize these effects.

Juvenile chinook might be present in low numbers in the action area during the proposed construction. To minimize the effects of construction on juvenile chinook, the SSSD will restrict the timing of construction. In-water work will occur between July 16 and January 14. The work is expected to take between three and four weeks. Adult chinook are also expected to be present during construction, especially during peak fall run upstream migration in late September through October. Adult fish are expected to be less affected by construction activities than juveniles, because of their size, mature development of organs, and their ability to avoid effected areas.

Water Quality. Water quality in Puget Sound will be affected by increased sediment during the dredging for, and removal of the end of the existing outfall, installation of the new pipe, and backfilling. To minimize these effects, the SSSD commits to several construction techniques that avoid or minimize sedimentation from construction activities. As a result of these measures, temporary increases in turbidity and sediment are not expected to influence the environmental

baseline over the long term, and the direct effects to Puget Sound chinook associated with exposure to contaminants will be limited.

While numerous studies demonstrate increased turbidity and suspended sediment levels adversely affect juvenile salmonids, little information exists about its effects on adult salmonids. Adult coho exposed to high turbidity (1,400-1,600 mg/L) demonstrated reduced survival (Stober et al. 1981). However, Sumner and Smith (1940), Whitman et al. (1982), and Brannon et al. (1981) demonstrated that adult chinook will avoid water with increased turbidity. NOAA Fisheries expects that adult salmonids are more capable of avoiding and surviving turbidity plumes and increased suspended sediments than juveniles. Although adult chinook will be exposed to increased turbidity and suspended sediments, their exposure will be limited by avoidance behavior.

Residual chlorine in treated effluent from treatment plants can be harmful to aquatic organisms. The term total residual chlorine (TRC) is used to refer to the sum of free chlorine and combined chlorine in freshwater. The State of Washington's TRC criteria for saltwater are 13 milligrams per liter for acute toxicity, and 7.5 milligrams per liter for effects from chronic exposure (King County 2003). During construction, effluent will be discharged into shallow and more ecologically sensitive habitats, without a diffuser. To avoid exposure of Puget Sound chinook and their prey organisms to toxic levels of chlorine during construction, the SSSD will dechlorinate effluent during this phase of construction.

SSSD will minimize the extent of adverse effects by restricting construction timing to limit salmonid exposure, especially juvenile chinook, and by using measures to limit suspension of contaminated sediments. Additionally, because adult chinook will have the opportunity and appear to avoid portions of the action area with high turbidity, their exposure is expected to be lower than it might otherwise be. Finally, since adult fish are not likely to be holding for long periods of time in the action area, they are not expected to accumulate contaminants.

The quality and quantity of effluent discharged from the outfall pipe will not change as a result of the proposed action. Therefore, potential impacts of effluent are not considered effects for this analysis.

Disturbance of Substrate. Excavation, removal of the existing outfall pipe, installation of the new pipe and backfilling will disturb the substrate of Puget Sound. Benthic and epibenthic organisms will be destroyed or displaced. Affected species are anticipated to repopulate the trenched area within a relatively short period. The work is planned for when the fewest number of juvenile chinook are expected to be in the area and when a decreased amount of prey would have the least effect on chinook.

Increased turbidity can also adversely affect invertebrate populations and other food items for rearing juvenile chinook in freshwater systems (Kirn et al. 1986 as cited in Sigler 1990, Emmett et al. 1984 as cited in Sigler 1990, Newcombe and MacDonald 1991). Information regarding increased turbidity and invertebrate populations in the estuarine environment is limited. If

eelgrass or sea grass communities, or other habitats with a high abundance of invertebrates are affected, invertebrate populations might be similarly affected. There are eelgrass communities in the action area. Excavation will avoid eelgrass to the maximum extend possible. Monitoring, and if necessary, restoration of damaged eelgrass are part of the project.

Interdependent and Interrelated Actions. Regulations implementing the Act of 1973, as amended, require that the NOAA Fisheries consider the effects of the activities which are interrelated and interdependent to the proposed Federal action (50 CFR Part 402.02). The Act defines interrelated activities as those which are part of a larger action and depend upon the larger action for their justification, and interdependent activities as those projects which have no independent utility apart from the action that is under consideration. Both interrelated and interdependent activities can be identified by asking whether an action and its associated impacts would occur "but for" the proposed action.

NOAA Fisheries did not identify any actions meeting the definition of interdependent and interrelated. Specifically, the proposed action is limited in scope to replacing an existing, deteriorated outfall pipe. The new pipe will improve the level of present function in a way that effluent will be more harmlessly discharged. The new pipe function has no influence over existing treatment capacity which will remain unchanged. Therefore, no changes in treatment that might be considered interdependent or interrelated to the proposed action will occur.

2.1.2.2 Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action. Indirect effects may include other Federal actions that have not undergone ESA section 7 consultation but will result from the action under consideration. These actions must be reasonably certain to occur or be a logical extension of the proposed action (50 CFR 402.02).

In addition to the pipeline replacement, SSSD proposes to maintain existing wastewater service capacity. The service area for the SSSD is designated Urban in the King County Comprehensive Plan (King County 2001b). The project will not increase treatment capacity.

Generally, the land use responses to infrastructure improvements are regulated by local governments such as cities and counties. Therefore, the construction of facilities that might indirectly affect listed salmonids are not within the COE's discretionary action that is the subject of interagency consultation under ESA section 7(a)(2). Nor is any take from other actions by SSSD covered by the authorization in the Incidental Take Statement prepared under ESA section 7(b)(4).

2.1.3 Cumulative Effects

Cumulative effects are defined as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action

subject to consultation" (50 CFR 402.02). Future Federal actions are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The action area for this project is the subtidal portion of Puget Sound affected by the SSSD outfall. The upland near the action area is incorporated city land. Non-point source pollution might increase as a result of future state or private activities. Increased clearing, impervious area and other activities that contaminate water could degrade water quality in the action area. Soil compaction and paving shift water that would otherwise be cleaned and stored in the soil matrix to the surface. As infiltration is increasingly obstructed by rooftops and pavement, groundwater and aquifer recharge declines, base flows reduce, and peak flows from surface water increase (Booth et al. 2002). In addition, increased impervious surface precludes the growth of large vegetation that would otherwise improve hydrologic patterns (by intercepting precipitation and providing duff for water storage), support invertebrate communities for fish food, and provide shade that reduces the temperature of surface flows. The pattern of reducing land permeability and increasing water temperature may continue over the years as a result of human population increases (King County 2001b), with likely greater amounts of low-quality stormwater being delivered to the action area.

2.1.4 Conclusion

NOAA Fisheries has reviewed the biological requirement of Puget Sound chinook, the environmental baseline, and the effects of the proposed action. In the foregoing effects analysis, NOAA Fisheries concluded that other than temporary effects during and just after construction of the underlying project, the proposed action adds nothing to the environmental baseline that would appreciably reduce the numbers, distribution, or reproduction of Puget Sound chinook. Therefore, the proposed action is not likely to jeopardize the continued existence of Puget Sound chinook. The determination of no jeopardy is based on the following: (1) the proposed outfall improves fish habitat over the current conditions; (2) adverse impacts to fish and their habitat from construction will be minimized by timing restrictions for in-water construction and other Best Management Practices; and (3) the eelgrass mitigation is expected to maintain eelgrass ecological functions in the action area.

2.1.5 Reinitiation of Consultation

Consultation must be reinitiated if the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203].

Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3]

Incidental take is defined as "any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." [50 CFR 17.3] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement.

2.2.1 Amount or Extent of Take Anticipated

Listed Puget Sound chinook use the action area as a migratory corridor and possibly for juvenile rearing. Chinook are expected to be present in the action area during construction of the proposed project, thus the proposed action is reasonably certain to result in incidental take through harm (habitat modification). The proposed action includes measures to reduce the likelihood of incidental take. To ensure the action agency carries out these measures, they are restated as terms and conditions below.

Despite the use of the best scientific and commercial data available, NOAA Fisheries cannot estimate the number of fish that would be injured or killed during construction activities. However, the spatial and temporal extent of these environmental changes provide a habitat surrogate for estimating the amount of take. As such, these estimates represent the limits on incidental take anticipated in this Incidental Take Statement. Therefore, should any one of these limits be exceeded during the construction of the project, work must stop and the action agency must reinitiate consultation.

For water quality effects (increased turbidity), take can occur only within 150 feet of the edge of the outfall construction trench. Turbidity will not exceed five NTU above background from project construction.

For effects on substrate, take can only occur within the footprint of the trench excavated for pipe replacement. Should the Contractor need to revise construction applications for this work, the action agency or its representative must consult with NOAA Fisheries to determine if the extent of effects is increased.

Should any in-water activity need to occur outside of the approved work window (July 16 to January 14), work must stop and the action agency must contact NOAA Fisheries.

Finally, take that results from a violation of the National Pollution Discharge Elimination System Permit issued for compliance with the Clean Water Act is not anticipated and not exempted in this Incidental Take Statement.

2.2.2 Reasonable and Prudent Measures

The NOAA Fisheries finds the following reasonable and prudent measures (RPMs) necessary and appropriate to minimize incidental take of Puget Sound chinook.

1. The COE shall avoid impacts to uplands and the intertidal zone.

2. The COE shall minimize take associated with water quality degradation.

3. The COE shall minimize take associated with disruption of substrate and destruction of eelgrass.

2.2.3 Terms and Conditions

To comply with ESA section 7 and be exempt from the prohibitions of ESA section 9, the COE must comply with the terms and conditions that implement the reasonable and prudent measures. These terms and conditions are non-discretionary.

1. To implement RPM No. 1 above, the COE will ensure that all construction access will be via barge from the waterway. Except for survey work, no construction activities will be conducted on intertidal lands or adjacent uplands.

2(a). To implement RPM No. 2 above, the COE will ensure the trench will be excavated with a barge-mounted clamshell bucket. All excavated material will be loaded onto a barge that will completely contain the dredged material. Dredged material and any removed sections of concrete or metal pipe shall be properly disposed of off site.

2(b). To implement RPM No. 2 above, the COE will ensure the trench will be backfilled with clean sand to minimize dispersion of fines from the removed sediments. All fill will be placed with a clamshell bucket and the bucket will be within approximately five feet of the trench before opening the bucket.

2(c). To implement RPM No. 2 above, the COE shall ensure the SSSD dechlorinate effluent during the shallow discharge period of construction with a pH-neutral Ascorbate Acid solution.

3(a). To implement RPM No. 3 above, the COE will ensure that a survey of eelgrass prior to and after construction to map eelgrass and assess impacts. The full extent of eelgrass patches encountered during the pre-construction survey will be staked using rebar. The rebar will be marked with horizontal yellow lines spaced one inch apart. The length of the rebar that protrudes above the bottom will be recorded. A grid of 15 transects will be established with the

proposed dredge trench as the center line transect and transects set at 10 feet intervals to a distance of 70 feet from each side of the centerline. Each transect will be parallel to centerline and will run between the depths of minus 30 feet MLLW to plus 2 feet MLLW. Semi-permanent screw-type anchors will be set at the corners of the grid and at the inner and outer margins of the eelgrass bed on the transects located 70 feet to the northwest and 70 feet to the southwest from the centerline. Additional anchors will be set on the centerline after the project has been completed.

A post-construction survey will be conducted no later than two weeks after the completion of construction. The survey will follow the same protocol, and will assess the level of sediment deposition in the surrounding area and other direct impacts from construction, if any. Sediment deposition will be measured by comparing the length of rebar that protrudes after the construction with what protruded before the construction. The post-construction survey will document physical characteristics of disturbed areas, including width, depth, and substrates characteristics.

3(b). To implement RPM No. 3 above, the COE will ensure that the area to be excavated will avoid eelgrass to the maximum extent possible, and will be limited to an area approximately 270 feet long and approximately 30 feet wide at the shallower end and eight feet wide at the deeper end.

3(c). To implement RPM No. 3 above, the COE will ensure monitoring and if necessary, restoration of damaged eelgrass. If it is feasible for before and after construction monitoring to occur within the same calendar year, and there are no observable adverse impacts to the density and distribution of eelgrass patches in the project area, no further monitoring of impacts will be required. If impacts are determined to be insignificant and that rapid natural recovery is likely, no additional mitigation will be required. If significant adverse impacts are observed, the contingency mitigation measures below will be implemented the following growing season after construction is completed.

In consultation with Washington Department of Fish and Wildlife (WDFW), donor stock for eelgrass transplanting will be obtained from the mapped eelgrass bed located approximately one mile south of the project, or from commercial sources. Donor eelgrass will be kept submerged in containers until ready for planting. Scuba divers will do planting by hand in or very near areas where eelgrass was lost due to construction activities. Eelgrass will be planted using a bare root method, with shoots anchored using thin garden staples or wooden stakes. Initial planting densities will be between four and 20 shoots per square meter, in quantities equal to a minimum of three times the estimated numbers of eelgrass turions lost.

Monitoring will occur during the summer for the first, second, and fifth years. Monitoring will be conducted the fourth year if the success criteria outlined below are not achieved. A report shall be prepared on an annual basis outlining the results of the monitoring. The report shall be submitted to WDFW no more than 30 days after the annual survey is conducted. Survey

methods will follow WDFW Intermediate Level Eelgrass survey protocols, and will cover the transplanted area and reference areas immediately adjacent to the project impact area.

The performance standards for the eelgrass transplant program will be total shoot density (the number of Turions per square meter) equal to the average total shoot density in the project area measured during the pre-construction eelgrass monitoring surveys. If mitigation activities fail to meet the performance standards, the reasons for failure and appropriate response will be identified by the SSSD and natural resource agencies. If the SSWD and natural resource agencies do not agree on an appropriate response, the natural resource agencies shall determine the course of action necessary.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section305(b)(2));
- NOAA Fisheries must provide conservation recommendations for any Federal or state activity that may adversely affect EFH (section305(b)(4)(A));
- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency must explain its reasons for not following the recommendations (section305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of Essential Fish Habitat

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. Designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border (PFMC 1999). Detailed descriptions and identifications of EFH are contained in the fishery management plans for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Pacific salmon (PFMC 1999).

3.3 Proposed Actions

The proposed action and action area are detailed above in section 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of 18 species of groundfish, four coastal pelagic species, and three species of Pacific salmon (Table 1).

3.4 Effects of Proposed Actions

As described in detail in section 2.1.2 of this document, the proposed action may result in detrimental short- and long-term impacts to a variety of habitat parameters. These adverse effects are:

1. Short-term degradation of habitat due to water quality degradation in the action area by in-water construction activities.

2. Short-term degradation of habitat due to substrate and benthic community disturbance.

3.5 Conclusion

NOAA Fisheries agrees that the proposed actions are not likely to adversely affect EFH for 18 species of groundfish, four coastal pelagic species, and three species of Pacific salmon.

3.6 Essential Fish Habitat Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that would adversely affect EFH. NOAA Fisheries understands that the COE intends to implement the proposed activity with the conservation measures described in the BE and Miller Creek Mitigation Plan. These measures, in addition to the Terms and Conditions outlined in section 2.2.3 are generally applicable to designated EFH for species in the action area and address anticipated adverse effects. Consequently, NOAA Fisheries recommends that they be adopted as EFH conservation recommendations below.

1. The COE will ensure that all construction access will be via barge from the waterway. Except for survey work, no construction activities will be conducted on intertidal lands or adjacent uplands.

2. The COE will ensure the trench will be excavated with a barge-mounted clamshell bucket. All excavated material will be loaded onto a barge that will completely contain the dredged material. Dredged material and any removed sections of concrete or metal pipe shall be properly disposed of off site.

3. The COE will ensure the trench will be backfilled with clean sand to minimize dispersion of fines from the removed sediments. All fill will be placed with a clamshell bucket and the bucket will be within approximately five feet of the trench before opening the bucket.

4. The COE shall ensure the SSSD will dechlorinate effluent during the shallow discharge period of construction with a pH-neutral Ascorbate Acid solution.

5. The COE will ensure that a survey of eelgrass prior to and after construction to map eelgrass and assess impacts as described in section 2.2.3.

6. The COE will ensure that the area to be excavated will avoid eelgrass to the maximum extent possible, and will be limited to an area approximately 270 feet long and approximately 30 feet wide at the shallower end and eight feet wide at the deeper end.

7. The COE will ensure restoration of damaged eelgrass as described in section 2.2.3.

3.7 Statutory Response Requirement

Pursuant to the MSA (section305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The COE must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 FR 600.920(k)).

TABLE 1: Fish species with designated EFH in the estuarine waters of Puget Sound

Groundfish Species	quillback rockfish *S. maliger*	Coastal Pelagic Species
spiny dogfish *Squalus acanthias*	cabezon *Scorpaenichthys marmoratus*	anchovy *Engraulis mordax*
California skate *Raja inornata*	lingcod *Ophiodon elongatus*	Pacific sardine *Sardinops sagax*
ratfish *Hydrolagus colliei*	kelp greenling *Hexagrammos decagrammus*	Pacific mackerel *Scomber japonicus*
Pacific cod *Gadus macrocephalus*	sablefish *Anoplopoma fimbria*	market squid Loligo opalescens
Pacific whiting (hake) *Merluccius productus*	Pacific sanddab *Citharichthys sordidus*	
black rockfish *Sebastes melanops*	English sole *Parophrys vetulus*	Pacific Salmon Species
bocaccio *S. paucispinis*	rex sole *Glyptocephalus zachirus*	chinook salmon *Oncorhychus tshawytscha*
brown rockfish *S. auriculatus*	rock sole *Lepidopsetta bilineata*	coho salmon *O. kisutch*
copper rockfish *S. caurinus*	starry flounder *Platichthys stellatus*	Puget Sound pink salmon *O. gorbuscha*

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APPENDIX 1

In-Water Construction Monitoring Report
Johnson Bridge Replacement (2002/01227)

Start Date: _____
End Date: _____

Waterway: Touchet River, Walla Walla County

Construction Activities:

_____
_____
_____
_____
_____

Number of fish observed: _____
Number of salmonid juveniles observed (what kind?):

_____
Number of salmonid adults observed (what kind?):

_____

What were fish observed doing prior to construction?_____

_____
_____

What did the fish do during and after construction?

_____
_____
_____
_____

Number of fish stranded as a result of this activity: _____

How long were the fish stranded before they were captured and released to flowing water?

_____
_____
_____

Number of fish that were killed during this activity: _____

Send report to:
National Marine Fisheries Service, Attention Diane Driscoll, Washington State Habitat Branch, 510 Desmond Dr. SE, Suite 103, Lacey, WA 98503